

**HANGER SPACING TABLE**

HANGER SPACING FOR STEEL PIPE (SCH. 40)

| PIPE SIZE       | HANGER SPACING |
|-----------------|----------------|
| 1", 1 1/4"      | 12'            |
| 1 1/2" & LARGER | 15'            |

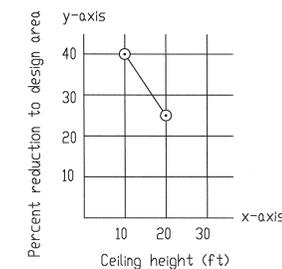
HANGER SPACING FOR STEEL PIPE (THINWALL)

| PIPE SIZE   | HANGER SPACING |
|-------------|----------------|
| 1" - 3"     | 12'            |
| 4" & LARGER | 15'            |

**11.2.3.2.3 Quick-Response Sprinklers**

11.2.3.2.3.1 Where listed quick-response sprinklers, including extended coverage quick-response sprinklers, are used throughout a system or portion of a system having the same hydraulic design basis, the system area of operation shall be permitted to be reduced without revising the density as indicated in Figure 11.2.3.2.3.1 when all of the following conditions are satisfied:

- (1) Wet pipe system
- (2) Light hazard or ordinary hazard occupancy
- (3) 20-ft (6.1-m) maximum ceiling height
- (4) There are no unprotected ceiling pockets as allowed by 8.6.7 and 8.8.7 exceeding 32 ft<sup>2</sup> (3 m<sup>2</sup>)



Note:  $y = \frac{-3x}{2} + 55$   
 For ceiling height  $\geq 10$  ft and  $\leq 20$  ft,  $y = \frac{-3x}{2} + 55$   
 For ceiling height  $< 10$  ft,  $y = 40$   
 For ceiling height  $> 20$  ft,  $y = 0$   
 For SI units, 1 ft = 0.31 m.

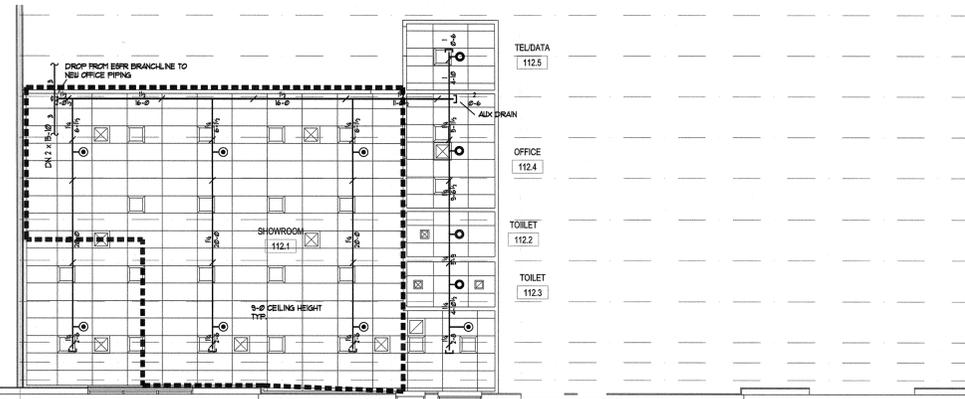
Figure 11.2.3.2.3.1 Design Area Reduction for Quick-Response Sprinklers

**DESIGN AREA REDUCTION FOR QUICK-RESPONSE SPRINKLERS**

(NFPA 13, 2010 EDITION)

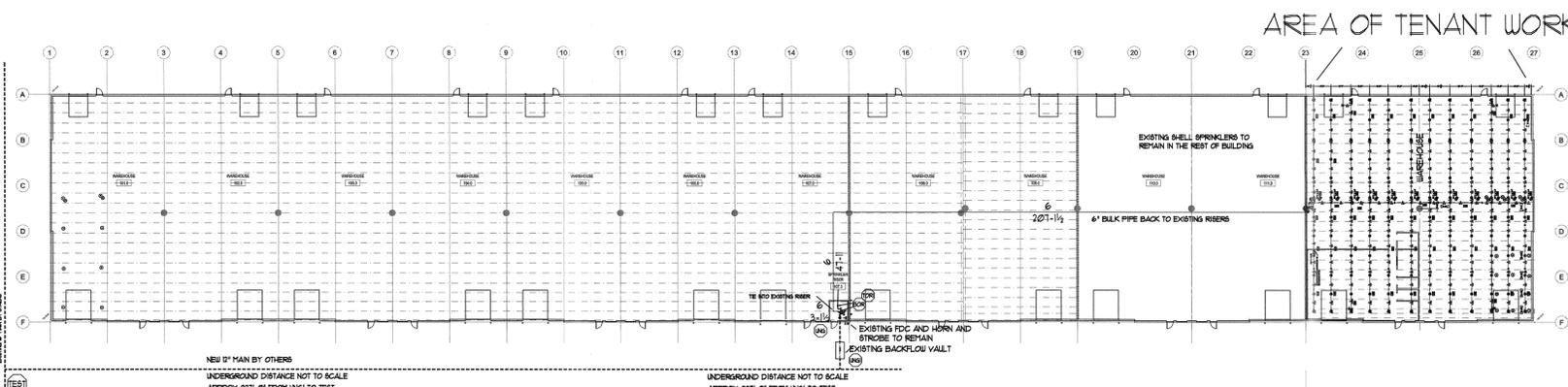
**SYSTEM DESIGN SUMMARY**  
 CALCULATED AREA: AREA 1  
 OCCUPANCY: OFFICE  
 HAZARD: LIGHT HAZARD  
 AREA / SPRINKLER: 400  
 DENSITY: 0.20 GPM / SQFT (MAX)  
 AREA OF OPERATION: 10/1500 SQFT  
 NUMBER OF OPERATING HEADS: 5  
 SYSTEM DEMAND: 245.00 GPM + 89.293 PSI + TEST  
 INSIDE HOSE DEMAND: N/A GPM  
 OUTSIDE HOSE DEMAND: 100 GPM  
 SPRINKLER HEAD: VIKING ECORREG  
 ORIFICE: 3/4"  
 K FACTOR: 10K  
 TEMPERATURE: 200°  
 NOTE: AREA REDUCED PER NFPA 13 FOR QR SPRINKLERS AND CEILING HEIGHT  
 CALCULATION DATA FILE: AREA 23DF

**SYSTEM DESIGN SUMMARY**  
 CALCULATED AREA: AREA 1  
 OCCUPANCY: WAREHOUSE  
 HAZARD: STORAGE  
 AREA / SPRINKLER: 100  
 DENSITY: 0.20 GPM / SQFT (MAX)  
 AREA OF OPERATION: 10 HEADS x 10 PSI  
 NUMBER OF OPERATING HEADS: 2  
 SYSTEM DEMAND: 100.00 GPM + 112.66 PSI + TEST  
 INSIDE HOSE DEMAND: N/A GPM  
 OUTSIDE HOSE DEMAND: 250 GPM  
 SPRINKLER HEAD: VICTALIC ESFR  
 ORIFICE: 1"  
 K FACTOR: 25.2K  
 TEMPERATURE: 165°  
 NOTE:  
 CALCULATION DATA FILE: AREA 13DF



OFFICE DESIGNED PER NFPA 13  
 LIGHT HAZARD 10/1500 SQFT,  
 AREA REDUCED FOR QR SPRINKLERS  
 AND 9'-0" CEILING HEIGHT

EXISTING OVERHEAD SPRINKLER SYSTEM REPLACED WITH NEW ESFR SPRINKLER SYSTEM PER NFPA 13 2016 EDITION  
 11.2.3.1 RACK STORAGE OF CARTONED UNEXPANDED GROUP A PLASTICS  
 30'-0" BUILDING HEIGHT 25'-0" STORAGE HEIGHT 12) 25.2K ESFR PENDANT @ 15 PSI + 250 GPM HOSE ALLOWANCE



SITEPLAN  
 NO SCALE

**GENERAL NOTES**

1. THE SYSTEM DESIGN CRITERIA COMPLIES WITH THE REQUIREMENTS OF NFPA 13 2016 EDITION.
2. ALL PIPING SHALL CONFORM WITH THE REQUIREMENTS OF NFPA 13 2016 EDITION.
3. ALL FITTINGS SHALL CONFORM WITH THE REQUIREMENTS OF NFPA 13 2016 EDITION.
4. ALL HANGERS SHALL CONFORM TO THE REQUIREMENTS OF NFPA 13 2016 EDITION.
5. FITTINGS FOR 1" THRU 2" SHALL BE CAST IRON THREADED. FITTINGS FOR 2 1/2" THRU 4" PIPING ARE TO BE GROOVED OR WELDED OUTLETS.
6. LENGTHS OF PIPING 1" THRU 2" ARE SHOWN AS THREAD TO THREAD UNLESS NOTED AS: G - GROOVE OR C - CENTER. 2 1/2" THRU 4" PIPE LENGTHS ARE SHOWN AS CENTER TO CENTER UNLESS NOTED AS: G - GROOVE, W - WELD, F - FACE OR FLANGE OR T - THREAD.
7. ALL SECTIONS OF TRAPPED PIPING SHALL HAVE AUXILIARY DRAINS WHERE REQUIRED.
8. THE OWNER SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE HEAT TO PREVENT THE PIPING FROM FREEZING.
9. ALL SWITCHBOARDS, PANEL BOARDS, DISTRIBUTION BOARDS AND MOTOR CONTROL CENTERS SHALL BE PROTECTED FROM DAMAGE BY OTHERS.



**TENANT FINISH SPRINKLERS**

CARRIER ENTERPRISES  
 LOT 1  
 644 NE MAGUIRE BLVD.  
 LEE'S SUMMIT, MO 64064

|                     |                |
|---------------------|----------------|
| REVIEWING AUTHORITY | L&B FIRE DEPT. |
| HEADS THIS SHEET    | 158            |
| TOTAL HEADS FOR JOB | 158            |
| SCALE               | 1/8" = 1'-0"   |
| DRAWN BY            | MATT KNOX      |
| REVISION DATE       | 2/2/26         |
| DATE DRAWN          | 2/2/26         |
| CONTRACT NUMBER     | J-2499         |
| DRAWING NUMBER      | 1 OF 1         |

**ADVANTAGE**  
 FIRE PROTECTION SYSTEMS INC.  
 "We are your Advantage"  
 404B N.W. 11th Street  
 Blue Springs, MO 64015  
 Tel. (816) 224-3400



**NOTICE OF NONRESPONSIBILITY**  
 THIS DRAWING SHALL BE USED AS A CONSTRUCTION GUIDE ONLY. ADVANTAGE FIRE PROTECTION SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR UNAUTHORIZED USE OF THESE DRAWINGS. THE USE OF THIS DRAWING FOR STRUCTURAL OR ARCHITECTURAL PURPOSES IS NOT AUTHORIZED. THIS PRINT IS THE EXCLUSIVE PROPERTY OF:  
 ADVANTAGE FIRE PROTECTION SYSTEMS, INC.

**CONSTRUCTION: EXISTING CONSTRUCTION**  
 INSULATED METAL DECK ROOF ON STEEL BEAMS & BAR JOIST • ELEV. AS NOTED ON PLAN  
**PIPE TYPE:**  
 SCHEDULE 2" AND SMALLER TO BE SCH. 40 PIPE WELDED 2" AND LARGER TO BE SCH. 10 PIPE  
**DESIGN CRITERIA:**

**FLOW TEST DATA:**

|          |      |     |
|----------|------|-----|
| STATIC   | 105  | PSI |
| RESIDUAL | 76   | PSI |
| W        | 2300 | GPM |

| DATE      | REVISION                        |
|-----------|---------------------------------|
| 4-18-2024 | SYSTEM NOW INCLUDES MPFI SAFETY |
|           | REVISION                        |

**Symbols**

| Symbol        | Description                        |
|---------------|------------------------------------|
| ○             | Hydraulic Reference Points         |
| ⊖             | Elev. Below Top of Steel           |
| ⊕             | Elev. Above Finished Floor         |
| + r/c/s 0'-0" | Elev. of Top of Steel              |
| ⊕             | Ceiling Height                     |
| ○             | Denotes Hanger Location            |
| ○             | Rise up or down                    |
| ○             | ALL PIPE CUTS ARE CENTER TO CENTER |

**Sprinkler Head Summary**

| Symbol | Count | RPT  | Orif. | Make     | Model   | Finish  | Style                        | Temp. | K-    | SN    |
|--------|-------|------|-------|----------|---------|---------|------------------------------|-------|-------|-------|
| ●      | 144   | 1"   | 1"    | VICTALIC | ESFR    | BR455   | ESFR PENDANT                 | 165°  | 25.2K | V4802 |
| ⊖      | 1     | 3/4" | 3/4"  | VIKING   | ORREGOR | ORREGOR | OR REG PENDANT w/ OR REG EGC | 200°  | 10K   | W6304 |
| ⊕      | 4     | 1/2" | 1/2"  | VIKING   | OR      | ORREGOR | OR PENDANT w/ OR REG EGC     | 200°  | 5.6K  | W6301 |
| ◀      | 3     | 1/2" | 1/2"  | VIKING   | OR      | BR455   | HOR SIDEWALL                 | 200°  | 5.6   | W3050 |